DirectClock

Keeping the right time on your iSeries and PCs with DirectClock (FunkUhr)

User Manual

iSeries & Toolmaker - Quality Combined

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1.0 General Information

DirectClock is a tool that automatically adjusts your iSeries system time using the atomic clock near Frankfurt broadcasting a clock pulse on a DCF long wave radio frequency. The broadcast has a range of approximately 1,500 kilometres from Frankfurt.

Use as a PC radio clock
With the PC software included in shipment and a serial port, you can also use the radio clock on your PCs. The software is installed under Windows. You will find details in a separate document, "PC Radio Clock", provided by HKW.

DirectClock is available in 6 variants:

- To connect to and synchronise a single iSeries
- To synchronise additional iSeries systems in a network
- To synchronise PC systems in a network
- To connect the radio clock hardware to a PC and synchronise iSeries in a network
- To synchronise over the internet using NTP
- To synchronise over a ComServer (remote V.24 interface)

1.1 Goals and benefits

Exact machine and personnel time recording is important if you use shop floor data collection and time recording systems on your iSeries. Inconsistencies between your system time and the actual time can lead to errors.

DirectClock is a combination of a small radio clock connected to an iSeries or PC through a V24 interface and a program that compares the radio clock pulse with your iSeries or PC system time at a defined interval (daily or weekly).

1.2 Terms of use

The software may only be used on the machine indicated in the product order. Changing the machine requires a new password and may incur licence fees. Please ask for a written quote.

2.0 Installing the Hardware Components

If you are using the radio clock hardware, you will first need to connect it when you first install DirectClock. You can do this on

- a free iSeries V24 interface
- a serial port on a PC (not required if you synchronise over the internet)
- a ComServer, which is hardware that allows you to "outsource" the iSeries serial ports to the network (see below for details).

2.1 Connect the radio clock to the iSeries or PC

The radio clock must be located at a place that provides clear reception for the atomic clock's transmissions.

The 9-pole **radio clock connector** fits most PC serial ports.

The radio clock connector must be connected to a special **adapter** included in shipment. The adapter should not be plugged directly into the iSeries interface card. Instead, connect it to the **socket on the thick black iSeries V24 cable**. This is the standard iSeries cable used to operate, for example, an ECS modem .

If you work with a V24 distributor because you want to operate both the radio phone and a modem with a single V24 interface, connect the black V24 cable to the V24 distributor. Two 25-pole cables are normally included with the V24 adapter to replace the black V24 cable used for the clock (see above) or modem.

The radio clock includes **batteries** and is ready to operate as shipped. If the batteries are empty, replace them using the same type by unscrewing the casing at the back of the clock. Polarity is important. Inserting the batteries in the wrong direction can destroy the clock.

Using a thin object, press the hollow on the back of the clock until you feel light resistance. This executes a **Reset** to readjust the clock. Within a period of approximately 5 minutes, the clock attempts to receive the radio signal and adjust the time display. Reception quality during the reset period is indicated by a flashing radio mast symbol and up to 4 horizontal bars. The fewer bars displayed, the poorer the signal.

You may be able to improve reception quality by turning the clock or moving it to another location. Ideally, the front of the clock should be held facing toward Frankfurt.

Once successfully synchronised with the atomic clock, the radio clock displays the current time and date. If unsuccessful, only seconds from 1 to 59 are displayed. A second attempt to reset may be successful. If the

reception at the clock location proves too poor, you will need to extend the iSeries V24 connection so that the clock can be placed at another location. Alternatively, you can connect the radio clock hardware to the iSeries using a ComServer, as described in the next section.

2.2 Connect the radio clock to a ComServer

DirectClock also supports the hardware connection to the ComServer. A ComServer allows you to make one or more V.24 interfaces available in a TCP/IP network.

This means that you can connect the radio clock without using a V24 interface on the iSeries. The iSeries uses TCP/IP to communicate with the ComServer V.24 interface. The ComServer itself acts as a serial port for the radio clock module.

The ComServer is also used with other Toolmaker products. It is ideal for "economising" on V24 interfaces on the iSeries. The ComServer can be maintained at a remote location.

There now follows a step-by-step guide to installing and configuring the hardware.

2.2.1 Connect the ComServer

Step 1: Connect the radio clock to the silver adapter provided. Then connect the adapter to the ComServer with a serial cable.

Important notice:
Always use the cables shipped with your product package. Never connect the radio clock directly to the ComServer.

Step 2: Connect the ComServer to your TCP/IP network.

Step 3: Connect the ComServer to the mains adapter.

2.2.2 Configure the ComServer

Step 1: ComServer IP address:

Before the iSeries can communicate with the ComServer, you must assign the ComServer a free IP address in your network. You can get this from your network administrator.

For a newly shipped ComServer, you can assign the address with the ARP command from a PC in the network. You can also configure the address from a PC using a zero modem cable (not included in delivery) or using a telnet session over port 1111. You will find more information on these options in your ComServer documentation.

With multi-port ComServers, you can enter the IP address on the panel on the ComServer.

Step 2: ComServer configuration menu

After assigning an IP address to the ComServer, you will need to configure the ComServer's COM port. To do this, set up a telnet connection to the ComServer using port 1111 from the iSeries or a PC.

PC: telnet <IP address ComServer, e.g. 192.168.1.55> 1111

iSeries: TELNET RMTSYS('<IP address ComServer, e.g. 192.168.1.55>') PORT(1111)

The ComServer configuration menu is displayed:

```
****************************
*     W&T - COM SERVER      *
****************************

 1. Mode: MONITOR
 2. Mode: MENU TYP
 3. Mode: COM SETUP
 4. Mode: SET TCPIP
 5. Mode: INFO
 6. Mode: PASSWORD
 7. Mode: SAVE
 8. Mode: RESET
 9. Mode: FLASH/EEP

Press <No.+ ENTER> (q=quit):
```

Select option 3: COM SETUP. A menu of option for the ComServers' serial ports appears.

```
*** Menu: Protocol TCPIP  ***

 1. Port A

Press <No.+ ENTER> (q=quit):
```

Select the port you want to use for the ComServer.

The menu for configuring serial transfer parameters appears.

```
*** Menu: Protocol TCPIP  ***

Port A 300,E,7,2,H
 1. Baud:
 2. Bit:
 3. Parity:
 4. Stopbit:
 5. Handshake:

Press <No.+ ENTER> (q=quit):
```

Baud=300

Bit=7

Parity=even

Stopbit=2

Handshake=Hardware

Important notice:

The ComServer and radio clock will not be able to communicate if you do not use these settings.

Exit through the menus with q=quit until you are back in the main ComServer menu.

Now select option 7=SAVE to permanently save the changed settings. Confirm the "Save Changes" prompt with "Y". You can now close the telnet session with q=quit.

Important notice:

Remember that changed settings will revert to their default values if you do not save.

3.0 Installing the Software Components

The following is a detailed guide to installing the radio clock.

Note:
The install program creates a library with the name **CLOCK** on your iSeries. If the library already exists, it is first renamed as CLOCKOLD. The installation is cancelled if the CLOCKOLD library already exists or if the rename fails, for example because objects are in use.

3.1 Install online help system

Toolmaker ships DirectClock with an online help system providing context-sensitive help for the current screen. The online help covers the same topics as the PDF and printed manuals but is much more convenient. The online help system must be installed once before use.

The file `DirectMedia xx.xx english.exe` containing the installation programs is located either on the shipped CD-ROM or on the download area of the Toolmaker homepage.

Enter the command `WRKLIB DIRMEDIA` in a command line to check whether the online help system is already installed in the latest version. The online help system is already installed when the library DIRMEDIA with description **DirectMedia/DirectHelp Version 2.73** (or higher) is displayed. In this case the online help system must only be installed, if the version number of the file `DirectMedia xx.xx english.exe` is higher than the version number displayed using the command WRKLIB.

The self extracting file `DirectMedia xx.xx english.exe` starts the installation of the online help system. Follow the instructions on screen to install first the iSeries component (library DIRMEDIA) and then the PC client. You must install the PC client on each PC on which you want to display online help.

To install the PC client on additional PCs, extract the file `DirectMedia.exe` from the exe file mentioned above (for example with WinZip) and start the installation on each PC by double clicking it.

Hint:
For proper display of the online help the library DIRMEDIA must be in your library list. Please ensure this.

3.2 Update

If you are proceeding an update installation, please ensure that nobody is working with the product.

3.3 Install DirectClock from iSeries CD-ROM drive

DirectClock is shipped on a data medium suitable for use on your IBM iSeries system. Both server and PC software are included.

Place the shipped CD-ROM in the CD-ROM drive on your iSeries

Sign on to your iSeries system with a user profile that includes ***ALLOBJ** and ***IOSYSCFG** rights, for example **QSECOFR**.

From a command line, enter the following command:

```
LODRUN OPT01
```

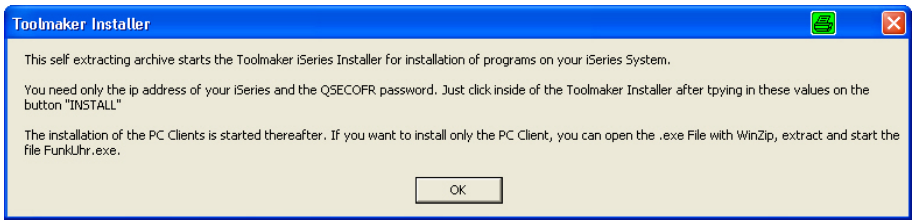
where OPT01 is the name of your CD-ROM drive.

3.4 Install DirectClock from PC

You can also install using the Toolmaker iSeries Installer. The installation is done on a connected PC. You do not need access to the iSeries CD-ROM drive. FTP must be active and you must have the system TCP/IP address and the QSECOFR password.

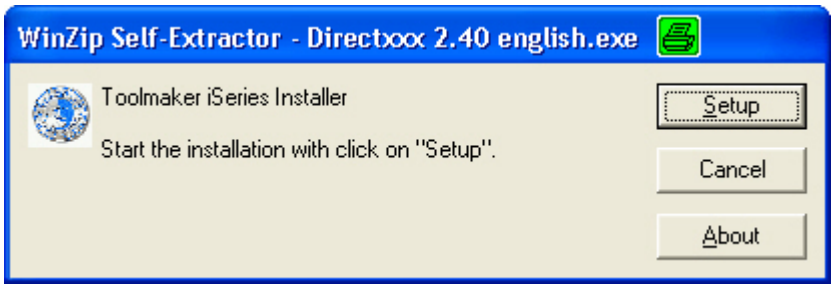
Insert the CD-ROM into the CD-ROM drive on your PC.

Start this installation variant by double clicking the file `DirectClock xx.xx english.exe` in the root directory on the CD-ROM. The self-extracting file will guide you step-by-step through the installation process.


Toolmaker Installer
This self extracting archive starts the Toolmaker iSeries Installer for installation of programs on your iSeries System.
You need only the ip address of your iSeries and the QSECOFR password. Just click inside of the Toolmaker Installer after tpying in these values on the button "INSTALL"
The installation of the PC Clients is started thereafter. If you want to install only the PC Client, you can open the .exe File with WinZip, extract and start the file FunkUhr.exe.
OK

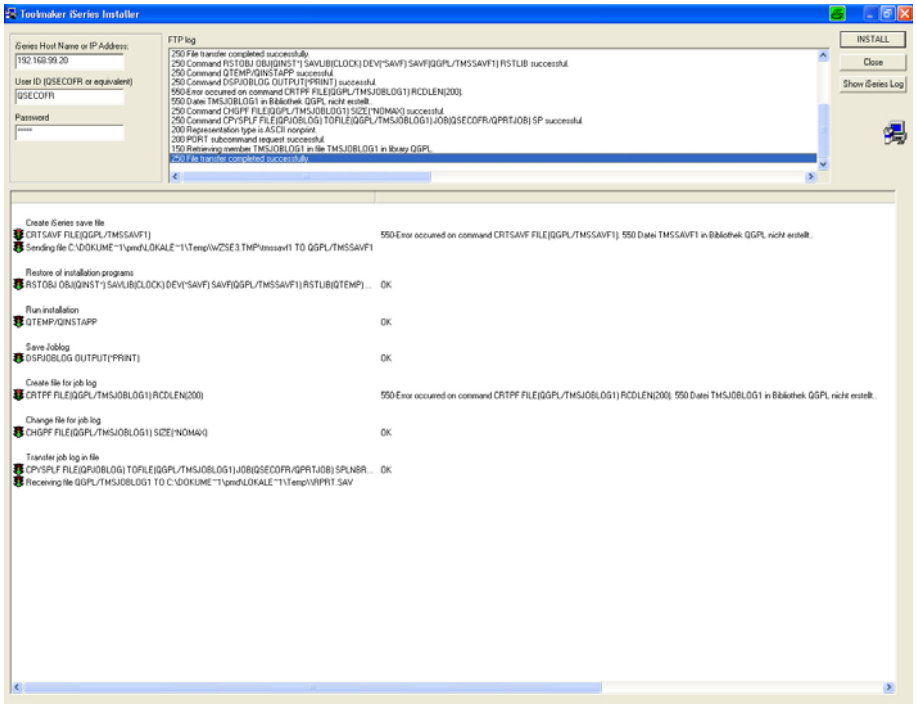
1020 – Toolmaker Installer

Read the notes on installation and click "OK" to continue.



1021 – Toolmaker iSeries Installer

To start the installation, click "Setup".



1022 – Installation dialog

Enter the IP address and the QSECOFR password, then click "INSTALL". When the installation is complete, you can display the joblog by clicking "Show iSeries Log". In case of successful installation the remark "**'File transfer completed successfully**" is noted at the end of the joblog. Please refer to the Toolmaker hotline for a revision of the installation process if you cannot find this remark. For this purpose save the joblog and send it via email to the Toolmaker hotline.

3.5 Install from download

Download the installation file `DirectClock xx.xx english.exe` from the "Software – DirectClock – Downloads" section of the Toolmaker website and start the installation by double clicking the .exe file.

The self-extracting file will guide you step-by-step through the installation process. When the installation is complete, you can display the joblog. The last line should read "**Product successfully installed**". Please refer to the Toolmaker hotline for a revision of the installation process if you cannot find this remark. For this purpose save the joblog and send it via email to the Toolmaker hotline.

3.6 Configure online help

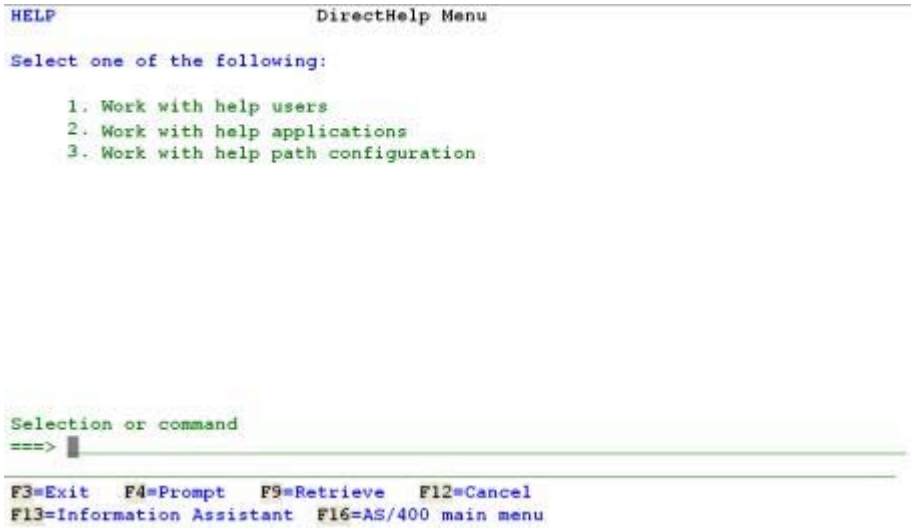
Because server, path and folder settings vary from customer to customer, Toolmaker has developed the online help system so that it can be customised to your environment with a few simple steps.

To start configuration, enter

```
ADDLIBLE DIRMEDIA

GO HELP
```

The online help menu is displayed.



1017 – The DirectHelp menu

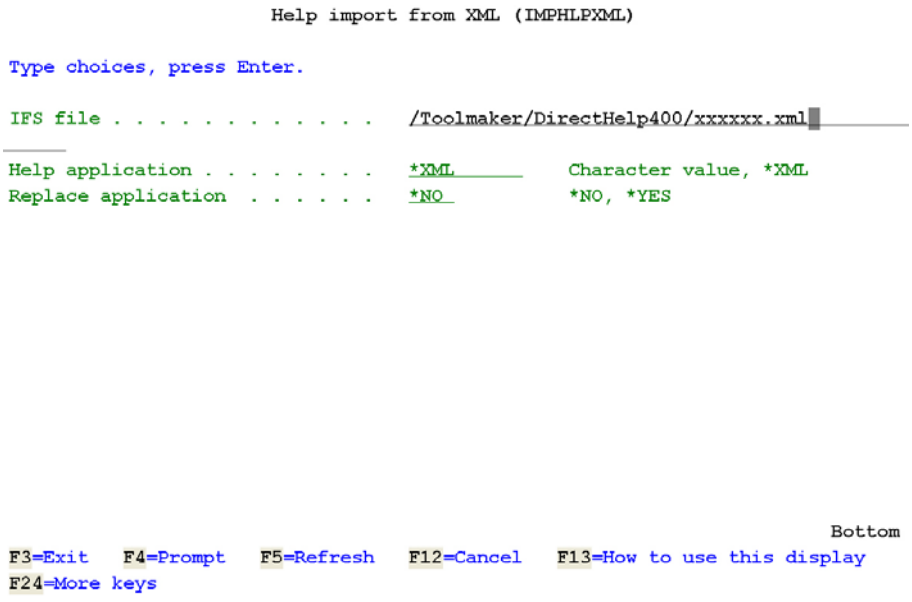
3.6.1 Check application

First check whether the application you want configure the online help for, is installed in the DirectHelp help system. To do so use option “Work with Help Applications”.

RENGEL
Work with Help Applications
5.04.06 14:55:26
Position to . . . . . .
Type choices and press Enter.
2=Change 4=Delete 7=DirectHelp Wizard 8=Help Tags
10=Panels 11=Fields 12= Formats
Op Applicat. Description Activ
xxxxxx Tool Yes
Bottom
F3=Exit F5=Refresh F6=Create F10=DirectHelp library list
F11=Display log F12=Cancel F14=Import F24=More keys

1023 – Work with Help Applications

If your application is not displayed here, it can be imported using the F14 function key.


Help import from XML (IMPHLPXML)
Type choices, press Enter.
IFS file . . . . . /Toolmaker/DirectHelp400/xxxxxx.xml
Help application . . . . . *XML Character value, *XML
Replace application . . . . . *NO *NO, *YES
Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

1024 – Help import

IFS file

An application's help definition is stored in a XML file in the iSeries' integrated file system. By default the path /Toolmaker/DirectHelp400/Name of the application.xml is used. If you are not sure about the name of the file to be imported you can display the XML files using the commands **`CD ,/Toolmaker/DirectHelp400'`** and **`WRKLNK`**.

Help application
The default option *XML installs the application with the name stored in the XML file.

Replace application
With this you control, whether an existing application will be replaced by the contents from the XML file or not.

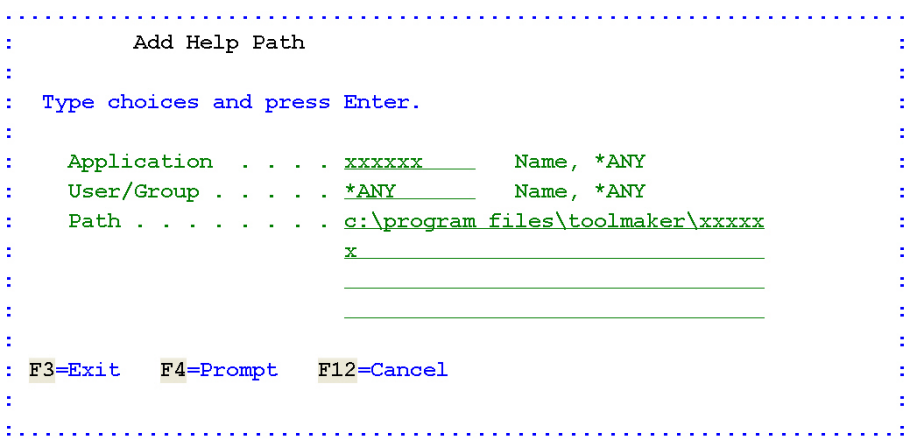
3.6.2 Configure paths

For a standard configuration, select option "Work with help path settings".

RENGEL
Work with Help Applications
5.04.06 14:55:26
Position to . . . . . .
Type choices and press Enter.
2=Change 4=Delete 7=DirectHelp Wizard 8=Help Tags
10=Panels 11=Fields 12=Formats
Op Applicat. Description Activ
xxxxxx Tool Yes
Bottom
F3=Exit F5=Refresh F6=Create F10=DirectHelp library list
F11=Display log F12=Cancel F14=Import F24=More keys

1018 – Help paths

You can use option 2 to change the DirectClock application for all users.


Add Help Path
Type choices and press Enter.
Application . . . . xxxxxx Name, *ANY
User/Group . . . . . *ANY Name, *ANY
Path . . . . . c:\program files\toolmaker\xxxxx
x
F3=Exit F4=Prompt F12=Cancel

1019 – Change help path

Application
Name of the application the help file path shall be configured for.

User/Group

Use *ANY to create a setting for all system users.

You can make custom settings for users and groups by using the menu option **Work with help users** to create and group users. With menu option **Work with help path configuration**, you can now replace the user *ANY with the users or groups you have created in order to define custom locations for employees. For example, a rep's local PC, a department server or a branch server. You can find more information on this topic in the manual of the DirectHelp online help system.

You will also find information on configuring the help display for menus and commands in the DirectHelp manual.

Path

Enter the path for the help file here. By default help files are installed in the path c:\Program Files\toolmaker\PRODUCT NAME on the user's client. However the setting can be changed here e.g. to store the help files centrally in the network for all users.

3.7 Install online help files

If you have installed from a download, the online help files are automatically installed. If you install from a CD-ROM, you will find the file `DiectClockhelp.exe` in the root directory. This file contains the Toolmaker online help files. Double click it to install to a local or network folder to which your users have access.

3.8 Assign password

You can test the radio clock without a password for up to 30 days after first installation. After that period, the shipped or faxed password must be entered. This is done with the commands:

```
ADDLIBLE CLOCK
```

```
INSPSW
```

Now follow instructions for password assignment. To use the full functionality of the radio clock (as both server and client), run the command INSPSW separately for the different license data to be entered.

3.9 Uninstall the iSeries software

To remove the radio clock program form your system, first use options 5 (Delete line description) and 9 (Work with schedule entries) to remove CLOCK objects and entries from other libraries on the iSeries. Exit the radio clock menu with F3. You can then use the commands

```
RMVCLK CONFIRM(*YES)
```

to delete the radio clock program and free disk space. The delete will not complete successfully if any jobs are using the CLOCK library, so remember to exit the menu.

3.10 Install the PC software

You will find the file Setup.exe in the folder \PC on the shipped CD. Run this file, for example using Windows Explorer. The PC files are also copied to an iSeries folder CLOCK when you install the software on the iSeries. You can also install the PC software from this folder.

InstallShield menus will guide you through the installation process. By default, radio clock PC programs are installed to C:\Program Files\Toolmaker\FunkUhr.

3.11 PC synchronisation software

If you have connected the radio clock to a PC instead of to the iSeries, the PC acts as a server for other clients. To set the current time on the PC server, run the program Setup.exe in the folder \pc\pcuhr. Follow the install programs' instructions. PC synchronisation is integrated into the Windows Control Panel, where it can be configured using the entry RCCM32.

You can of course also use previously installed modules in addition to the PC synchronisation software. The Toolmaker PC radio clock is used exclusively as a server or client program for synchronising other computers on the network.

3.12 Uninstall the PC software

Remove the software from your PC using Windows by choosing "Start – Settings – Control Panel – Add/Remove Programs".

4.0 Configuration

Display the Radio Clock/400 main menu with the command

STRCLK

The following options are available:

```
CLOCK                          Clock/400 Menu                       15.02.06
RENGEL                                                              21:45:59

Select one of the following:

       1. Interactive synchronisation

       2. Configure clock

       4. Create line description
       5. Delete line description
       6. Work with line status

       8. Schedule time synchronisation (batchjob)
       9. Work with job scheduler entries for clock

      10. Start clock server
      11. End clock server
Selection or command
===>

F3=Exit    F4=Prompt    F9=Retrieve    F12=Cancel
F13=Information Assistant  F16=AS/400 main menu
```

0001 – The CLOCK menu

4.1 iSeries configuration

To start configuration, select option 2 "Configure clock".

```
CLOCK                    Configure Clock                            15.02.06
RENGEL                                                              21:46:40

Please make changes and press enter:

Type of communication (Source)   . . :  T       V=Radio Clock (V24 port)
                                         N=Network (Clock Server/PC)
                                         T=TCP/IP NTP server (internet)
                                         R=Radio clock using ComServer

Log PC communication  . . . . . . . :  N       L=Log (File RPRT), N=No

Hostname/address of clock server  . :  NTP3.FAU.DE          (Hostname)
                                                            (aaa.bbb.ccc.ddd)
System timezone . . . . . . . . . . :  _25     GMT +01:00 Berlin, Bern, Brus
Zone for daylight saving  . . . . . :  EUR     Europe, East Europe, USSR
Time for setting daylight saving (S):  _2:00   HH:MM
Time for setting daylight saving (W):  _3:00   HH:MM
Change QTIMZON of system  . . . . . :  Y       Y=Yes, N=No
System value QTIMZON for summer . . :  QP0100CET2     Value, *SAME
                     for winter . . :  QP0100CET      Value, *SAME

F3=Exit    F12=Cancel
```

0002 – iSeries configuration

Input fields

Type of communication
The type of communication defines the way the clock is synchronised on an iSeries.

The values allowed are:

H for local hardware, indicating that a clock is connected by V24 to the iSeries

N for network, indicating that the iSeries is synchronised using another iSeries or a radio clock PC server.

T for TCP/IP, indicating that the iSeries uses the NTP protocol to get the current time over the internet

C for ComServer, indicating that a radio clock (hardware) connected to a remote V24 interface in the network is used. (The ComServer is an additional hardware module. The next chapter describes ComServer connection and configuration in detail).

PC communication log
You can trace communication between PC and iSeries for test purposes. Enter the value "**L**" in this field to log communication data to the file RPRT in the library CLOCK.

WARNING:
Don't forget to switch off the trace when you have finished testing. Otherwise all communication data will be written to the RPRT file.

Hostname/address of clock server
If you have set the type of communication to "**N**", enter the hostname or TCP/IP address of the clock server here. This is another iSeries or a PC.

If you have set the type of communication to "**T**", enter the TCP/IP address of the NTP time server on the internet you want to use to synchronise the iSeries. We recommend that you use the TCP/IP address 131.173.17.7.

System timezone
Contains the time zone relative to Greenwich Mean Time (GMT). The value for Germany is "25".

Zone for daylight saving
Specify the zone for daylight saving time. The value for Europe is "EUR".

Time for setting daylight saving (S)

Specifies the time at which summer time begins. The value for Germany is "02:00:00" am.

Time for setting daylight saving (W)
Specifies the time at which winter time begins. The value for Germany is "03:00" am.

Adjust UTC offset automatically
Enter "Y" to allow the clock to automatically adjust the system value QUTCOFFSET. QUTCOFFSET is used to adjust for time differences, for example in e-mail sent with GMT time.

System value QTIMZON for summer
From V5R3M0, OS/400 assigns a special system value for summer time. The default value for Germany is QP0100CET2.

System value QTIMZON for winter
From V5R3M0, OS/400 assigns a special system value for winter time. The default value for Germany is QP0100CET.

4.2 Configure iSeries for clock on ComServer

The following steps are required only if you have a clock **connected to a ComServer**.

4.2.1 Host table entry

To enable Radio Clock/400 to connect to the ComServer, enter the IP address and hostname (e.g. CLOCK) in your iSeries host table.

To do this, run CFGTCP from an iSeries command line and select option 10, "Work with TCP/IP host table entries". There, you can use option 1=Add to enter the IP address and hostname.

Important notice:
Please check the settings for TCP/IP domain information using option 12 in the CFGTCP menu. The search sequence for hostnames should be set to *LOCAL, so that the system searches for the hostname in the local tables before accessing a DNS server. Consult your system or network administrator before changing this setting. Incorrect settings may seriously impede performance.

4.2.2 Check ComServer connection

Use the PING command on the iSeries to check the connection to the ComServer.

PING <Host table entry for clock, e.g. CLOCK>

4.2.3 Configure clock

To configure Radio Clock/400, please call the Radio Clock/400 menu:

```
STRCLK
```

```
CLOCK                          Clock/400 Menu                        15.02.06
RENGEL                                                               21:45:59

Select one of the following:

       1. Interactive synchronisation

       2. Configure clock

       4. Create line description
       5. Delete line description
       6. Work with line status

       8. Schedule time synchronisation (batchjob)
       9. Work with job scheduler entries for clock

      10. Start clock server
      11. End clock server
Selection or command
===>

F3=Exit    F4=Prompt    F9=Retrieve    F12=Cancel
F13=Information Assistant  F16=AS/400 main menu
```

0001 – The Clock/400 start menu

Select option 2 "Configure clock".

```
 CLOCK                    Configure Clock                          15.02.06
 RENGEL                                                            21:46:40

 Please make changes and press enter:

 Type of communication (Source)  . . :  C       V=Radio Clock (V24 port)
                                        N=Network (Clock Server/PC)
                                        T=TCP/IP NTP server (internet)
                                        R=Radio clock using ComServer

 Log PC communication  . . . . . . . :  N       L=Log (File RPRT), N=No

 Hostname/address of clock server  . :  COMSERVER_____      (Hostname)
                                                            (aaa.bbb.ccc.ddd)
 System timezone . . . . . . . . . . :   25     GMT +01:00 Berlin, Bern, Brus
 Zone for daylight saving  . . . . . :  EUR     Europe, East Europe, USSR
 Time for setting daylight saving (S):   2:00   HH:MM
 Time for setting daylight saving (W):   3:00   HH:MM
 Change QTIMZON of system  . . . . . :  Y       Y=Yes, N=No
 System value QTIMZON for summer . . :  QP0100CET2     Value, *SAME
                      for winter . . :  QP0100CET      Value, *SAME

F3=Exit    F12=Cancel
```

0004 – Configure clock, screen 2

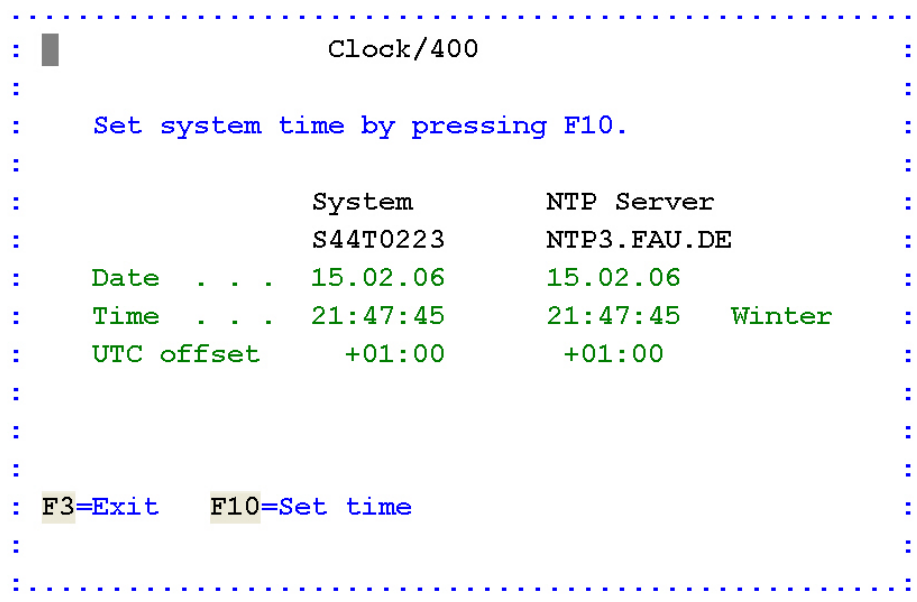
In "Type of communication", enter "C" for Radio Clock using ComServer.

The hostname specified should be the hostname entered in the iSeries host table (for example CLOCK).

Save the changes with Enter.

4.2.4 Interactive synchronisation

Test Radio Clock/400 using option 1 "Interactive synchronisation".



0005 – Interactive synchronisation

Use F10 to synchronise system and clock times.

4.3 Configure iSeries for clock on iSeries V.24

4.3.1 Create line description CLOCK

Use option 4 in the main menu to create a one-off line description (CRTLINASC) **for the clock on the V24 interface**.

The first screen displayed is an online Help screen. You can use Page up to scroll. Use the Enter key to run the command and prompt to change the resource name. Check where the clock has been connected to the iSeries during hardware installation. The name (e.g. LIN011) must be entered here.

If the name is incorrect (for example an existing and active resource name), you will encounter problems when you choose option 1. If this happens, you can use GO HARDWARE and option 1 "DFV resources" to run a diagnosis. You will need to delete the line description first with option 5 if the resource name needs to be changed.

If the line description already exists and option 4 is selected, the call ends without an error message when you exit the online text.

4.3.2 Delete line description CLOCK

Option 5 deletes the line description CLOCK from the system. This is required if you want to delete the resource name or to completely remove the clock software from the iSeries.

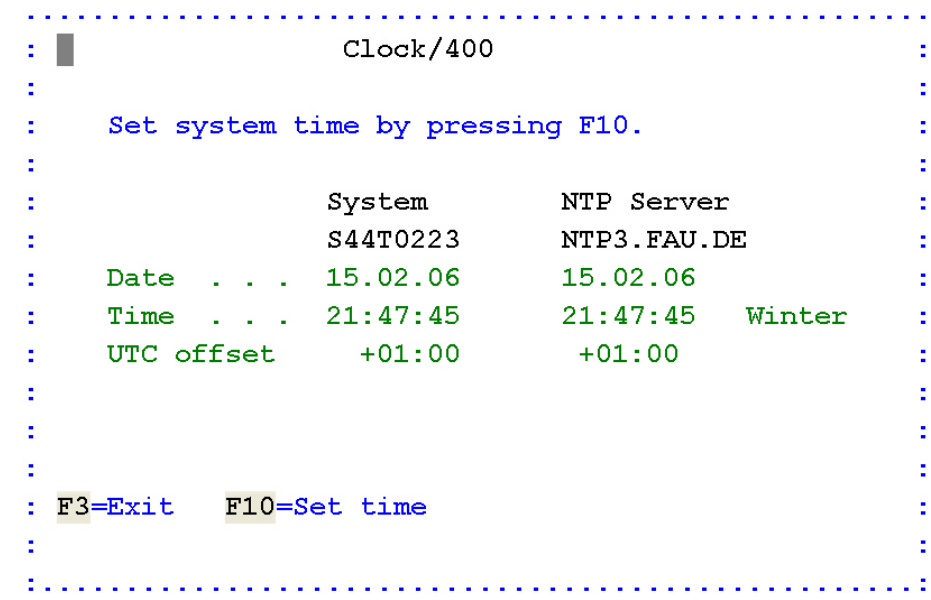
4.3.3 Work with line status CLOCK

Allows you to display the line status for CLOCK if you encounter problems calling option 1. The command WRKCFGSTS *LIN is executed.

4.3.4 Interactive synchronisation

After making the configuration settings described below, you can use this option at any time to check the system value QTIME against the correct time from the radio clock in an interactive dialog, where you can use F10 to synchronise.

The line description CLOCK is activated or the time is retrieved from the clock server. The program then attempts to receive the pulse from the radio clock. If successful, system values and clock data are displayed.



0005 – Interactive synchronisation

The display is refreshed once per second. If there is any discrepancy, you can use F10 to adjust the system value QTIME. This process can take up to 15 seconds, depending on the performance of your iSeries. Despite the time lost updating the system values, the program attempts a synchronisation with second accuracy. Once the system value has been updated, the "lost"

seconds are made up in a rapid sequence on the screen. The screen is then again refreshed once per second.

An error message is displayed if the program fails to contact the clock.

You can regularly and automatically execute the synchronisation process by creating a job schedule entry with option 8.

4.4 Schedule time synchronisation

You can use option 8 to create a job schedule entry that automatically synchronises the system value QTIME and the clock. This runs the operating system command ADDJOBSCDE.

The parameters for this command might look like this:

Frequency	FRQ	*WEEKLY
Schedule date or	SCDDATE	*NONE
Schedule day	SCDDAY	*ALL
Schedule time	SCDTIME	040000

Using these parameters, the iSeries regularly and automatically synchronises QTIME and clock time, in this example every day at 4 o'clock in the morning. You can display the schedule status at any time with option 9, which also allows you to change and delete.

Note:

Because the synchronisation updates the system date, please ensure that you don't schedule the job for shortly before or after midnight. This is because if the program may attempt to update directly before the date is changed, it could interfere with the automatic system date change.

Important notice:

The system time is changed only if the difference between iSeries system time and clock time is **less than or equal to 90 minutes**. This interval ensures that daylight savings time is supported, and that extreme variances do not interfere with iSeries operation.

4.5 Work with job scheduler entries for clock

Use option 9 to monitor automatic synchronisation between the iSeries and the radio clock. This runs the command **WRKJOBSCDE**, which displays a list of scheduler entries for change or delete.

During **automatic clock synchronisation**(in batch), a **message** is displayed in the QSYSOPR queue if problems are encountered receiving clock signals. Possible causes are: clock has lost contact, contact is poor or irregular, battery is low, product code has expired. V.24 communications problems are output to QSYSOPR as system error messages.

4.6 Start clock server

You can use option 10 to start the clock server if you use your local iSeries as a server for other iSeries or PC systems. The server runs the job CLOCKSERV in the QINTER subsystem and answers requests for synchronising with clients.

To ensure that it is always active, we recommend that you include the clock server in your QSTRUP start program (after starting TCP/IP!).

Note that CLOCKSERV is restarted with the commands

```
ADDLIBLE LIB(CLOCK)
```

```
STRCLKSRV
```

if you have ended and restarted the QINTER subsystem.

4.7 End clock server

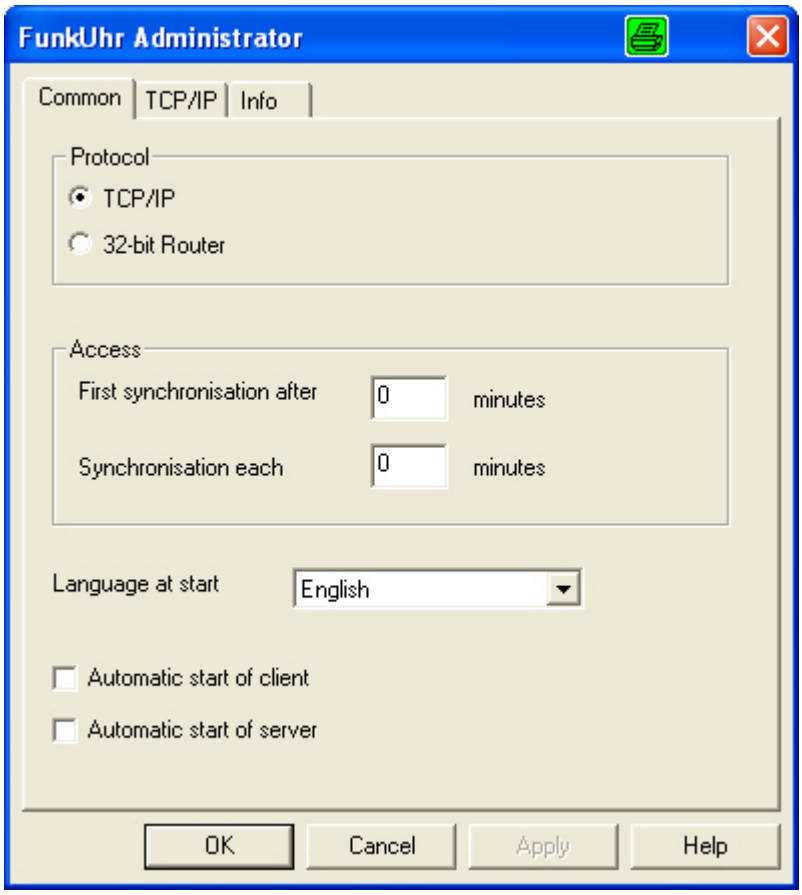
You can use option 11 to end the active clock server.

5.0 Administrator

Before you can start working with the PC component of the radio clock, some synchronisation work with the clock administrator is required.

5.1 PC configuration

To begin, choose "Start – Program Files - Funkuhr - FunkUhr Administrator".



0006 - FunkUhr Administrator - Common

Input fields

Protocol

Select the type of communication with the iSeries – either TCP/IP or, if you work with a router connection, (e.g. Netsoft Router), 32-bit Router.

Access

First synchronisation after

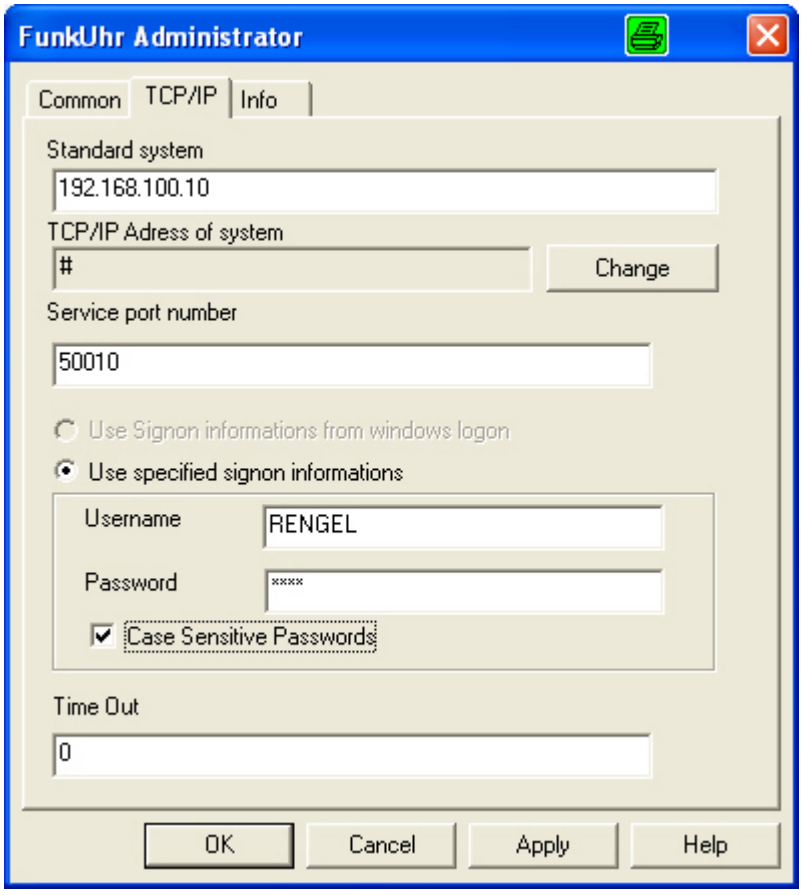
Enter the number of minutes after which the clock is synchronised in client mode; that means in which sequence the PC gets the time from the iSeries. The default value is "2", indicating that the PC retrieves and synchronises the time from the Series every two minutes.

Synchronisation each
Enter the number of minutes after which the clock is synchronised in client mode; that means in which sequence the PC gets the time from the iSeries, after it is started. The default value is "0", indicating that the synchronisation takes place immediately after the start.

Automatic start of client
If you synchronise the PC time using an iSeries clock server, allows you to automatically load the PC client program on system start. Check this option to automatically start the client program.

Automatic start of server
If you synchronise the iSeries time using a PC clock server, allows you to automatically load the PC server program on system start. Check this option to automatically start the server program.

If you have selected "TCP/IP" as the type of communication, now click the "TCP/IP" tab to make further settings. Otherwise click "OK" to save your settings.



0007 - FunkUhr Administrator - TCP/IP settings

Input fields

Standard system
Your iSeries TCP/IP name

TCP/IP address of system
Enter your iSeries TCP/IP address in the format indicated. Your iSeries TCP/IP address can be found in the file "HOSTS" in the Windows folder or with the AS/400 command "CFGTCP" and option 1 "Work with TCP/IP interfaces".

Service port number
The PC communicates with the iSeries through a TCP/IP socket program. The related server program runs on the iSeries. In order to connect, the service port number must be the same as the service table entry on the iSeries. The default value is port number "50010". If this port number is already in use, or if you wish to use a different number, you must ensure that the port numbers on the PC and the iSeries match. To check the service table entries on the iSeries, use the OS/400 commands "CFGTCP", option 21 "Configure related tables" and option 1 "Work with service table entries".

Username
Enter the name of your user profile here, or the name of another user authorised to query the related files.

Password
The password you enter here is encrypted and saved.

Folder for password
The folder where user and password is stored in encrypted form.

Timeout
The default value is “0“. You may leave this setting as is.

Note
When you have made your settings, first click "Apply" and then "OK".

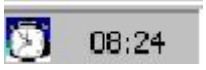
5.2 PC server program

If you want to run the radio clock on a PC as a server program, allowing your iSeries to retrieve the time from the PC, the PC server program must be started before the iSeries requests the time. For information on iSeries settings, please refer to chapter "iSeries configuration".

If you have checked the "Automatic start of server" option during connection configuration, the server is automatically started each time the PC is booted.

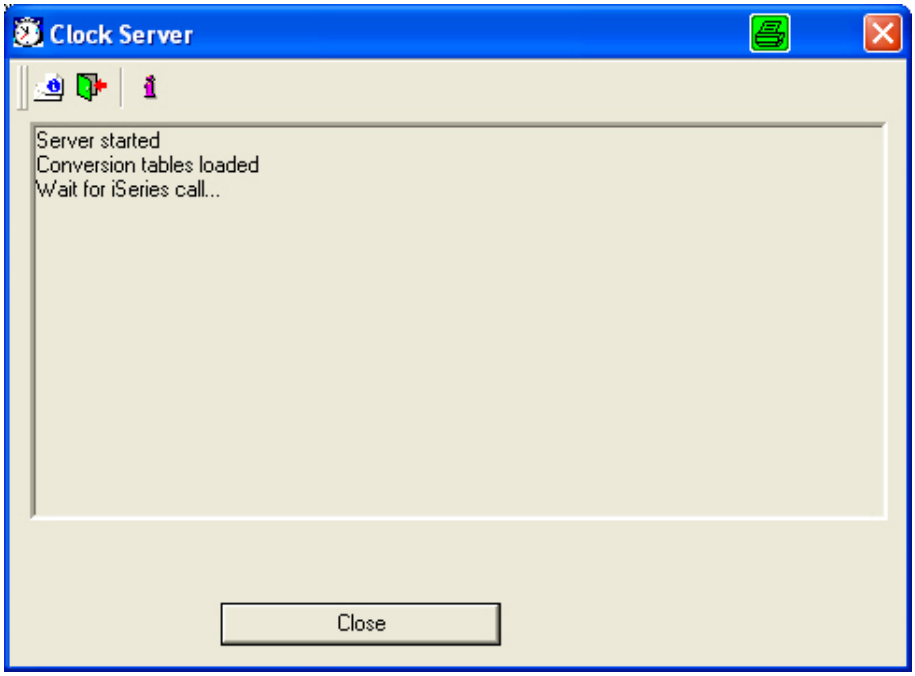
You can also start the server manually by choosing "Start – Program Files - FunkUhr - FunkUhr Server. The server program is now ready to pass the time when it receives a request from an iSeries client.

An icon is displayed in the taskbar while the server is active.



0008 – Clock server is active

You can display server program processes by right clicking the icon and selecting "Show".



0013 – Server program log

5.3 PC client program

If you want to run the radio clock on a PC as a client program, so that the PC retrieves the time from an iSeries, the PC client program must be started to allow synchronisation.

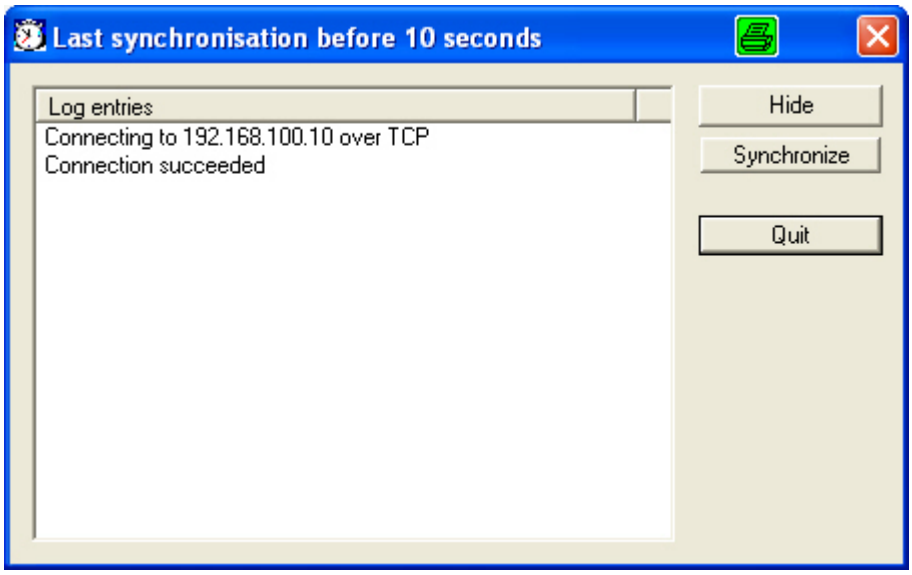
You can start the client manually by choosing "Start – Program Files - FunkUhr – Activate FunkUhr Client. The time will now be requested from the iSeries at the interval defined in administrator. Note that the job CLOCKSRV must be active in the subsystem QINTER or QBASE to allow iSeries synchronisation on the server system.

An icon is displayed in the taskbar while the server is active.

0009 - Icon

5.3.1 Automatic synchronisation

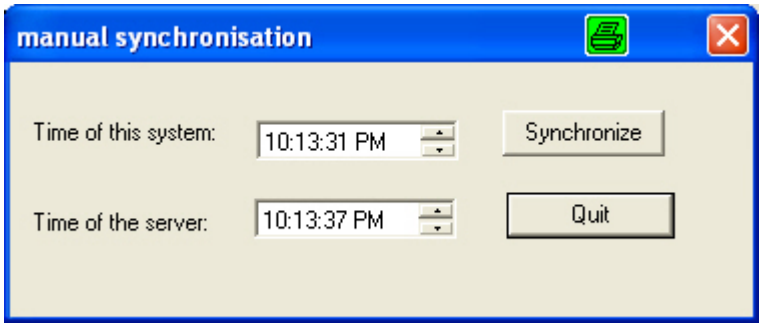
When the client is active, the PC requests the time from the iSeries at the interval defined in administrator and synchronises the PC time with the time passed from the iSeries. You can view synchronisation processes by right clicking the clock client icon in the taskbar and selecting "Show".



0010 – The PC client

5.3.2 Manual synchronisation

When the PC client is active, you can start synchronisation either by displaying the client as described above and then choosing "Synchronise", or by right clicking the radio clock PC client icon in the taskbar and choosing "Manual synchronisation". Click the "Synchronise" button in the following window for time synchronisation.



0011 - Manual synchronisation on the PC

6.0 Start Synchronisation from an Application

If you want to start synchronisation of the system value QTIME and the clock from an application, first ensure that the library CLOCK has been added to the job library list.

In a CL program, the call would look like this:

```
CALL PGM(TKC110CL) PARM('4')
```

In an RPG program, it looks like this:

```
CALL 'TKC110CL'

PARM '4'       ACTION   1
```

Because the call may end abnormally in some situations, you may want to consider including monitoring messages such as MONMSG in CL or a reference number at position 56 in RPG.

Batch applications with Radio Clock/400 always produce both a joblog and a message in the QSYSOPR message queue. You can use both sources for error analysis.

Important notice:

The system time is changed only if the difference between iSeries system time and clock time is **less than or equal to 90 minutes**. This interval ensures that daylight savings time is supported, and that extreme variances do not interfere with iSeries operation.

7.0 Additional Functions and Program Enhancements

The program now only uses the **time received** from the clock to change the system time. The system date is no longer changed.

Important notice:

The system time is changed only if the difference between iSeries system time and clock time is **less than or equal to 90 minutes**. This interval ensures that daylight savings time is supported, and that extreme variances do not interfere with iSeries operation.

A batch joblog is always created to enable analysis should errors occur during automatic synchronisation of the system time. You can use log objects (CLKSAVx) to check the clock data record if required.

You can force time conversion with line 7.00 QDATE=Y in source file TKC110TT in file QDDSSRC in library CLOCK (not recommended).

8.0 Enhancements and Corrections

The following is a summary of enhancements and corrections.

8.1 Version 1.93

- Client PCs can receive the time from an iSeries, allowing them for example to synchronise workstations or servers.
- Other iSeries systems can now retrieve and synchronise the time from a central iSeries with a connected clock.
- iSeries systems can now retrieve and synchronise the time from PC systems with a connected clock.

8.2 Version 2.00

- The PC client now supports manual synchronisation.

8.3 Version 2.30

- Synchronisation via TCP/IP and NTP protocol as well as ComServer implemented.

8.4 Version 2.40

- Adjusted for enhancements to time conversion in OS/400 Version 5 Release 3
- Integration of English, French, Italian.
- Integration of online help with DirectHelp

8.5 Version 2.41

- Correction of the installation routine for Upgrade of very old versions
- Correction of the synchronisation window on the Client

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